

CLAIMS

1 1. A method for fabricating a magnetic head, comprising the steps of:
2 fabricating a P1 pole layer upon previously fabricated elements of a magnetic head;
3 fabricating a P1 pole pedestal upon said P1 pole in magnetic connection therewith;
4 fabricating an etch stop layer upon said P1 pole;
5 fabricating an induction coil structure upon said etch stop layer;
6 fabricating a flat upper surface upon said P1 pedestal and induction coil structure;
7 fabricating a write gap layer upon said flat surface;
8 fabricating a P2 pole, including a P2 pole tip, upon said write gap layer.

1 2. A method for fabricating a magnetic head as described in claim 1 wherein said induction
2 coil structure is formed by fabricating induction coil trenches in an etchable insulation material
3 utilizing an ion etching process.

1 3. A method for fabricating a magnetic head as described in claim 2 wherein said etchable
2 insulation layer is deposited upon said etch stop layer; and
3 a patterned etching mask is fabricated upon said etchable material, and a reactive ion etch
4 process is utilized to etch said induction coil trenches into said etchable material.

1 4. A method for fabricating a magnetic head as described in claim 3 wherein the material
2 forming said etch stop layer is substantially more resistant to ion etching than said etchable
3 material.

1 5. A method for fabricating a magnetic head as described in claim 1 wherein a back gap
2 piece is fabricated in magnetic connection with said P1 pole in the same fabrication step in which
3 said P1 pedestal is fabricated.

1 6. A method for fabricating a magnetic head as described in claim 1 wherein said flat
2 surface is fabricated in a chemical mechanical polishing (CMP) step.

1 7. A method for fabricating a magnetic head as described in claim 1 wherein said P2 pole is
2 fabricated utilizing photolithographic fabrication techniques.

1 8. A method for fabricating a magnetic head as described in claim 1 wherein said induction
2 coil traces are fabricated with approximately the same thickness as said P1 pedestal.

1 9. A method for fabricating a magnetic head as described in claim 2 wherein said etchable
2 material is comprised of an organic polymer and said etch stop layer is comprised of a material
3 selected from the group consisting of SiO_2 and Al_2O_3 .

1 10. A method for fabricating a magnetic head as described in claim 2 wherein said etchable
2 material is comprised of SiO_2 and said etch stop layer is comprised of Al_2O_3 .

1 11. A magnetic head, comprising:
2 a substrate;
3 read head elements being fabricated upon said substrate;

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- 4 a P1 pole being fabricated upon said read head elements;
5 a P1 pole pedestal being disposed upon said P1 pole in magnetic connection therewith;
6 an etch stop layer being disposed upon said P1 pole;
7 an induction coil structure being fabricated upon said etch stop layer;
8 a flat upper surface being formed upon said P1 pedestal and said induction coil structure;
9 a write gap layer being disposed upon said flat upper surface; and
10 a P2 pole, including a P2 pole tip, being disposed upon said write gap layer.

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1 12. A magnetic head as described in claim 11 wherein said write gap layer is substantially
2 flat.

1 13. A magnetic head as described in claim 12 wherein said P1 pedestal is approximately the
2 same thickness as a thickness of said induction coil structure.

1 14. A magnetic head as described in claim 12 wherein a back gap piece is disposed upon said
2 P1 pole in magnetic connection therewith.

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- 1 15. A hard disk drive comprising:
2 a motor for rotating a spindle;
3 a magnetic medium disk mounted on said spindle;
4 an actuator assembly including a magnetic head for writing magnetic information on said
5 disk, said magnetic head including:
6 a substrate;

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- 7 read head elements being fabricated upon said substrate;
- 8 a P1 pole being fabricated upon said read head elements;
- 9 a P1 pole pedestal being disposed upon said P1 pole in magnetic connection therewith;
- 10 an etch stop layer being disposed upon said P1 pole;
- 11 an induction coil structure being fabricated upon said etch stop layer;
- 12 a flat upper surface being formed upon said P1 pedestal and said induction coil structure;
- 13 a write gap layer being disposed upon said flat upper surface; and
- 14 a P2 pole, including a P2 pole tip, being disposed upon said write gap layer.

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- 1 16. A hard disk drive as described in claim 15 wherein said write gap layer is substantially
- 2 flat.
- 1 17. A hard disk drive as described in claim 16 wherein said P1 pedestal is approximately the
- 2 same thickness as a thickness of said induction coil structure.
- 1 18. A hard disk drive as described in claim 16 wherein a back gap piece is disposed upon
- 2 said P1 pole in magnetic connection therewith.